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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/826,537	04/15/2004	Kwok Wai Cheung	IPVBP004	2147

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EXAMINER	
BLAIR, KILE O	
ART UNIT	**PAPER NUMBER**
2615	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/826,537	CHEUNG ET AL.	
	Examiner	Art Unit	
	Kile O. Blair	4114	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 December 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-16 and 18-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-16 and 18-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 December 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *01/17/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This Office action is in response to the communication filed on 12/10/2007. Claims 1-3, 5-16, and 18-24 are pending. Claims 4 and 17 are canceled. Claims 1, 5-7, 13-16 and 18-23 have been amended and claim 24 is new.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3, 5-9, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manabe (US Pat. No. 6,556,687) in view of Takahashi et al. (US Pat. No. 6,643,377).

Regarding claim1, Manabe teaches a directional audio delivery apparatus for a system, comprising: audio conversion circuitry that produces ultrasonic signals based on the decoded audio signals provided by a device (although not explicitly stated, it is inherent that there must be an audio conversion circuitry present in order to be able to take audio input signal produced by one of the sound sources and modulate it to produce an ultrasonic wave beam, Col. 1, lines 28-36) and a directional speaker that outputs an ultrasonic output based on the ultrasonic signals wherein said apparatus further comprises a beam-attribute control unit operatively connected to said directional speaker, said beam-attribute control unit being configured to electronically control an attribute of the output of said directional speaker (the curvature is able to be controlled by the position signal, Col. 9, lines 10-23), and wherein the attribute controlled influences a beam width of the ultrasonic output of said directional speaker so that the beam width of the ultrasonic output can be changed (changing the curvature influences the width of the beam as shown in Fig. 7).

Although Manabe does not teach the limitation of providing decoded signals, Takahashi et al. teaches a set top box (Takahashi et al., Col. 3, lines 53-57) which inherently provides decoded audio signals to the system which outputs ultrasonic waves (Takahashi et al., Col. 3, lines 44-53). It would have been obvious to use the apparatus of Manabe with any device that receives incoming encoded signals and provides

decoded audio signals for use by the system; specifically a set top box as disclosed by Takahashi et al., with the motivation of outputting audio with high directionality as disclosed by Takahashi et al., where the set top box receives an encoded signal and decodes it into an audio signal, at which point the circuitry of Manabe converts it into an ultrasonic signal.

Regarding claim 2, Manabe in view of Takahashi et al. teaches a directional audio delivery apparatus as recited in claim 1, wherein said system is one of an audio system, a stereo system, a television system (set top box, Takahashi et al., Col. 3, lines 53-57), a radio receiver, Digital Versatile Disc (DVD) player, a compact disc (CD) player, and a Video Cassette Recorder (VCR) player.

Regarding claim 3, Manabe in view of Takahashi et al. teaches a directional audio delivery apparatus as recited in claim 1. Although Manabe does not explicitly disclose that the speaker is repositionable with respect to the system, Manabe does disclose that the prior art teaches a directional speaker that is repositionable with respect to said system (the loudspeaker rotates so that the waves converge on a listener, Manabe, Col. 2, lines 23-28). It would have been obvious for one of ordinary skill in the art to implement into the apparatus of Manabe in view of Takashi et al. with the feature of speaker rotation as disclosed as prior art by Manabe.

Regarding claim 5, Manabe in view of Takahashi et al. teaches a directional audio delivery apparatus as recited in claim 1, wherein the attribute controlled influences the direction of the ultrasonic output of said directional speaker (controlling the curvature based on the position signal of the user influences the direction of the

ultrasonic output when the listener changes positions, Manabe, Col. 5, lines 22-31).

Regarding claim 6, Manabe in view of Takahashi et al. teaches a directional audio delivery apparatus as recited in claim 1, wherein the attribute controlled depends on the position of a user of said audio system or depends on a remote controller for said audio system (the curvature is controlled based on the position signal which correlates to the position of a listener, Manabe, Col. 5, lines 22-31).

Regarding claim 7, Manabe in view of Takahashi et al. teaches a directional audio delivery apparatus as recited in claim 1, wherein said directional speaker has a plurality of separately controllable regions, and wherein said beam-attribute control unit activates one or more of the controllable regions to control the ultrasonic output from said directional speaker (blades which are moved in order to alter the curvature to direct the sound towards the listening point, Manabe, Col. 5, lines 56-63).

Regarding claim 8, Manabe in view of Takahashi et al. teaches a directional audio delivery apparatus as recited in claim 1, wherein said directional speaker has a curved surface, which can be a curved emitting surface or a curved reflecting surface, so that the ultrasonic output produced is intentionally configured to be non-collinear (the concave surface of the speaker is a curved emitting surface and creates a set of non-collinear waves as shown in Figure 4, Manabe, Col. 5, lines 22-31).

Regarding claim 9, Manabe in view of Takahashi et al. teaches a directional audio delivery apparatus as recited in claim 1, further comprising one additional directional speaker to create stereo effect (left and right speakers, Takahashi et al., Col. 3, lines 44-53). Although Manabe does not explicitly teach the feature of using two

speakers to create a stereo effect, it would have been obvious to one of ordinary skill in the art to use this configuration as disclosed by Takahashi et al. with the motivation of creating a stereo effect which is well known in the art.

Regarding claim 13, Manabe in view of Takahashi et al. teaches a directional audio delivery apparatus as recited in claim 1, wherein said directional audio delivery apparatus further comprises an environmental adjustment unit that is configured to modify the audio signals or the ultrasonic signals in accordance with a piece of information related to the environment in the vicinity of a portable device used by a user of said apparatus (commander modifies the audio signals by rotating the position of the speakers, Takahashi et al., col. 3, lines 8-11).

Claims 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manabe in view of Takahashi et al. in further view of Wiser et al. (US Pub. No. 2003/0009248 A1).

Regarding claim 10, Manabe in view of Takahashi et al. teaches a directional audio delivery apparatus as recited in claim 1.

Although Manabe in view of Takahashi et al. does not explicitly teach the feature wherein said apparatus further comprises a personalization unit operatively connected to said audio conversion circuitry, said personalization unit modifies the audio signals or the ultrasonic signals in accordance with an audio characteristic associated with a user of said apparatus, it would have been obvious to one of ordinary skill in the art to utilize the audio processing profiles of Wiser et al. ([0088]) into the set top box of Manabe in

view of Takahashi et al. with the motivation of providing a more suitable and personalized audio signal to the individual.

Regarding claim 12, Manabe in view of Takahashi et al. in further view of Wiser et al. teaches a directional audio delivery apparatus as recited in claim 10, wherein the audio characteristic pertains to a hearing characteristic and/or a hearing preference associated with the user (user can edit audio profile using equalizer button, Wiser et al., [0088]).

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Manabe in view of Takahashi et al. in further view of Wiser et al. and in further view of Brain (Brain; Marshall, How USB Ports Work, October 11, 2002, www.howstuffworks.com/usb).

Regarding claim 11, Manabe in view of Takahashi et al. in further view of Wiser et al. teaches a directional audio delivery apparatus as recited in claim 10.

Although Manabe in view of Takahashi et al. in further view of Wiser et al. does not explicitly teach the feature wherein the audio characteristic is provided to said directional audio delivery apparatus in a removable, portable data storage device that can be electrically connected to said apparatus, it would have been obvious to one of ordinary skill in the art to store the audio characteristic in a portable USB drive as taught by Brain (storage device, pg. 4, ¶ 5) with the motivation of making the characteristics portable from set top box to set top box.

Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manabe in view of Takahashi et al. in further view of Fosgate et al. (US Pat. No. 5,666,424).

Regarding claim 13, Manabe in view of Takahashi et al. teaches a directional audio delivery apparatus as recited in claim 1.

Although Manabe in view of Takahashi et al. does not explicitly teach the feature wherein said directional audio delivery apparatus further comprises an environmental adjustment unit (microprocessor, Fosgate et al., col. 5, lines 7-16) that is configured to modify the audio signals or the ultrasonic signals in accordance with a piece of information related to the environment in the vicinity of a portable device used by a user of said apparatus (output levels at the listening position where portable microphone is located at listening position, Fosgate et al., col. 4, lines 13-22), it would have been obvious for one of ordinary skill in the art to use the automatic balancing and calibration processor of Fosgate et al. as the environmental adjustment unit with the motivation of customizing the sound output to the user.

Regarding claim 14, Manabe in view of Takahashi et al. in further view of Fosgate et al. teaches a directional audio delivery apparatus as recited in claim 13, wherein the piece of information is determined based on a position of the portable device or wherein the piece of information includes a noise level (level detector to detect sound level at the listening position, Fosgate et al., col. 5, lines 7-16).

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Manabe in view of Takahashi et al. in further view of Tanaka et al. (US Pat. No. 4,823,908).

Regarding claim 15, Manabe in view of Takahashi et al. teaches a directional audio delivery apparatus as recited in claim 1. Although Manabe in view of Takahashi et al. does not explicitly teach the feature wherein the ultrasonic output from said directional speaker is reflected by at least one reflecting surface (ultrasonic wave radiator 8 which reflects of the reflective plate 19 as seen in Fig. 16 of Tanaka et al., col.10, lines 7-21) before propagating into the free space where a user of the apparatus is positioned, as directionally-constrained audio output, it would have been obvious for one of ordinary skill in the art to use the reflective plate of Tanaka et al. with the directional audio delivery apparatus of Manabe in view of Takahashi et al with the motivation of providing a directional ultrasonic signal to a user with the some attenuation to protect the user from waves that are too powerful and potentially harmful.

Claim 16 and 18-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manabe in view of Tanaka et al. in further view of Fosgate et al.

Regarding claim 16, Manabe teaches the a method for providing directionally constrained audio to a user using a directional speaker, said method comprising: receiving audio signals to be delivered to the user from an audio device (input signal produced by one of the sound sources is modulated, Col. 1, lines 28-31); and driving the directional speaker to generate the directionally constrained audio (position signal, Col. 9, lines 10-23), wherein the beam attribute input controls at least one attribute of

the directionally constrained audio(the curvature is able to be controlled by the position signal, Col. 9, lines 10-23), wherein the method further comprises converting the audio signals to ultrasonic signals (input signal produced by one of the sound sources is modulated, Col. 1, lines 28-31), and wherein said driving includes at least driving the directional speaker in accordance with the ultrasonic signals to produce ultrasonic output for providing the directionally constrained audio (applying first output signal to a super-directional loudspeaker, col. 1, lines 28-36).

Although Manabe does not explicitly disclose the feature wherein the beam attribute input controls a reflector associated with the directional speaker, it would have been obvious for one of ordinary skill in the art to use the reflective surface adjustment mechanism of Tanaka et al. (col. 4, lines 51-59) with the motivation of changing the directivity.

Additionally, although Manabe does not explicitly teach the feature of receiving a beam attribute input, it would have been obvious to use the microphone and calibration method of Fosgate et al. (Fosgate et al., col. 4, lines 13-22) where the level information gathered by the microphone is used to determine beam attributes such as volume with the method of Manabe in view of Tanaka et al. with the motivation gathering information in order to determine proper beam attributes.

Regarding claim 18, Manabe in view of Tanaka et al. in further view of Fosgate et al. teaches a method as recited in claim 16 wherein said method further comprises altering the orientation of the directional speaker (speaker 's orientation can be adjusted to focus on P1 or P2 in the example of Figure 7 of Manabe).

Regarding claim 19, Manabe in view of Tanaka et al. in further view of Fosgate et al. teaches a method as recited in claim 16, wherein the beam attribute depends on a distance or a position of an object (beam attribute depends on listening position as determined by the location of the portable microphone; Fosgate et al., col. 4, lines 13-22).

Regarding claim 20, Manabe in view of Tanaka et al. in further view of Fosgate et al. teaches a method as recited in claim 16, wherein the beam attribute input being received is automatically provided, not based on an input entered by the user (the sound level detected by the microphone is automatically provided, Fosgate et al., col. 4, lines 13-22).

Regarding claim 21, Manabe in view of Tanaka et al. in further view of Fosgate et al. teaches a method as recited in claim 16. Although Manabe in view of Tanaka et al. in further view of Fosgate et al. does not explicitly disclose the feature wherein said method further comprises providing conventional audio, wherein the beam attribute input selects output from either one of the directionally constrained audio or the conventional audio, wherein the audio signals are transformed into ultrasonic signals if directionally-constrained audio is selected, and wherein the audio signals are not transformed into ultrasonic signals if conventional audio output is selected, it would have been obvious for one of ordinary skill in the art to provide the choice of using conventional audio as disclosed by Fosgate et al. (col. 2, lines 45-53) or the ultrasonic signals disclosed by Manabe with the motivation of providing the user more choices of operation. Additionally, it would have been obvious to provide the user the option to

select between a directional speaker and a conventional speaker as each speaker has its benefits and the user would obviously want to use the speaker best suited for the specific application. The option to select between two unpatentable configurations is obvious.

Regarding claim 22, Manabe in view of Tanaka et al. in further view of Fosgate et al. teaches a method as recited in claim 16, wherein the directional speaker has a plurality of segments to emit the directionally constrained audio; and wherein the segments can be individually controlled for emitting the directionally constrained audio (blades which are moved in order to alter the curvature to direct the sound towards the listening point, Manabe, Col. 5, lines 56-63).

Regarding claim 23, Manabe in view of Tanaka et al. in further view of Fosgate et al. teaches a method as recited in claim 16, wherein the attribute input is configured to increase the ultrasonic frequency of the ultrasonic signals to increase the width of the beam of the directionally constrained audio (the width of the ultrasonic beam is altered as shown in Figure 7 of Manabe based on information about the listener position from the microphone of Fosgate et al., col. 4, lines 13-22).

Regarding claim 24, Manabe in view of Tanaka et al. in further view of Fosgate et al. teaches a method as recited in claim 22, wherein the attribute controls at least one of the many segments to affect the width or the direction of the directionally constrained audio (blades which are moved in order to alter the curvature to direct the sound towards the listening point, Manabe, Col. 5, lines 56-63).

It would have been obvious for one of ordinary skill in the art to use the microphone of Fosgate et al. to determine the listening position to adjust the width of the beam to be better transmitted to the listening position.

Response to Arguments

Applicant's arguments with respect to claims 1-3, 5-16, and 18-24 have been considered but are moot in view of the new ground(s) of rejection.

The rejection of claim 23 under 35 U.S.C. 112 has been withdrawn.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kile O. Blair whose telephone number is (571) 270-3544. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on (571) 272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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